Gender Diversity and Female Enrollment in Science: A Mini Research Study on BSc Colleges in Chennai

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Abstract

This mini research project investigates gender diversity in science education with a focus on female enrollment in top co-educational Bachelor of Science (BSc) programs in Chennai. Drawing on enrollment data between 2021 and 2025, the study examines trends, institutional policies, and social factors that influence female participation in science. College Findings reveal steady increases in women's enrollment, ranging from 45% to 58% across five leading institutions. Departmental preferences, policy interventions, and persistent barriers are analyzed to understand both progress and remaining challenges. The project concludes with recommendations to strengthen gender parity in STEM education.

Introduction

Science and technology fields are globally recognized as drivers of innovation and economic growth. Yet, women have historically been underrepresented in science disciplines due to cultural stereotypes, institutional limitations, and a lack of supportive structures. In India, especially in metropolitan centers like Chennai, the educational landscape is undergoing change, with universities and colleges making conscious efforts to bridge the gender divide.

This research focuses on five top co-educational colleges in Chennai—**Loyola College, Madras Christian College (MCC), Presidency College, Guru Nanak College, and SRM Institute of Science and Technology (SRMIST)**. These institutions are considered benchmarks for science education in South India. By examining female enrollment patterns and associated policies, this study seeks to understand how far gender inclusivity has progressed and what challenges remain.

Research Objectives

1. To analyze female enrollment patterns in BSc programs between 2021 and 2025.

2. To identify department-wise participation trends across biology, chemistry, mathematics, physics, and computer science.

3. To evaluate institutional policies and initiatives supporting gender diversity.

4. To highlight ongoing challenges and propose recommendations to enhance gender equity.

Methodology

The study adopts a **descriptive research design**, focusing on secondary data analysis. Enrollment statistics were collected from institutional reports, UGC higher education surveys, and government education databases. Supplementary information was sourced from gender studies centers such as the **Centre for Women's Studies at Ethiraj College** and policy reports from higher education authorities.

- **Population Studied**: Female BSc students enrolled in five co-educational colleges in Chennai.

- **Time Frame**: 2021–2025.

- **Data Sources**: Institutional records, UGC annual reports, government education surveys, and published gender equity studies.

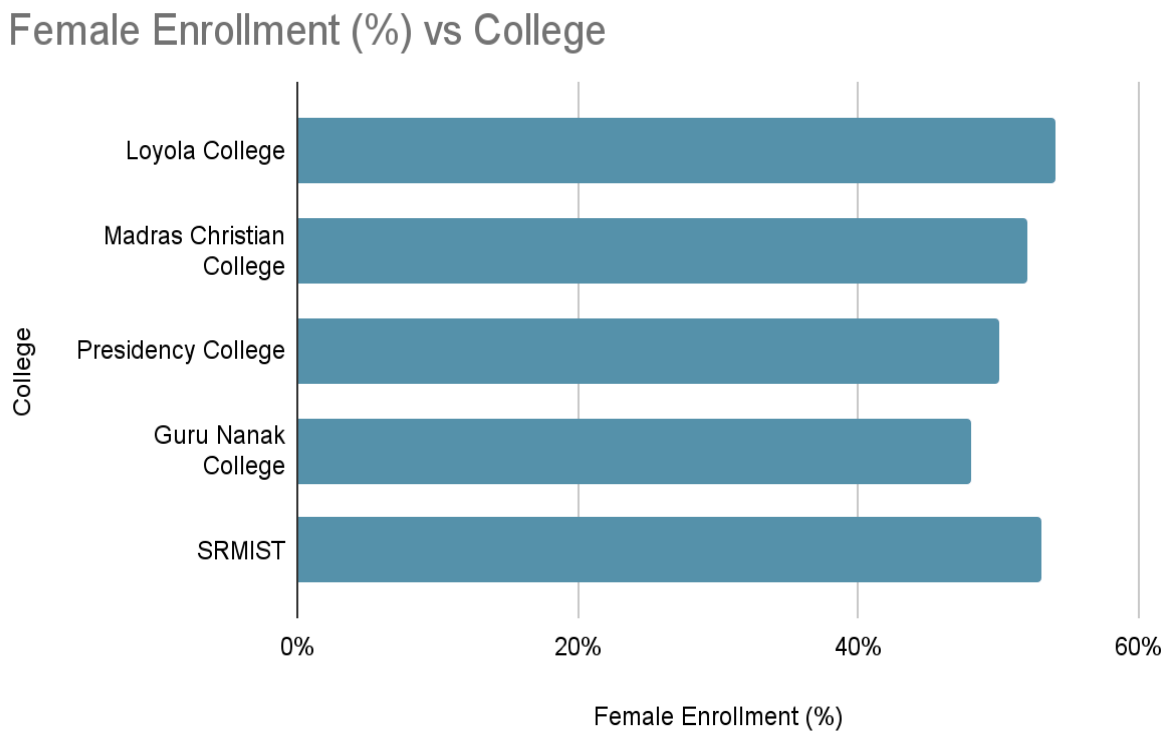
Female Enrollment Statistics and Trends (2021–2025)

- **Enrollment Proportion:** Female enrollment has steadily increased by approximately 8-12% over the last five years in these colleges, with current figures ranging between 45%-58% depending on the institution and department.

- **Departmental Preferences:** Higher female enrollment is noted in Biology, Chemistry, and Mathematics departments. Physics and Computer Science have shown slower female growth but are improving year by year.

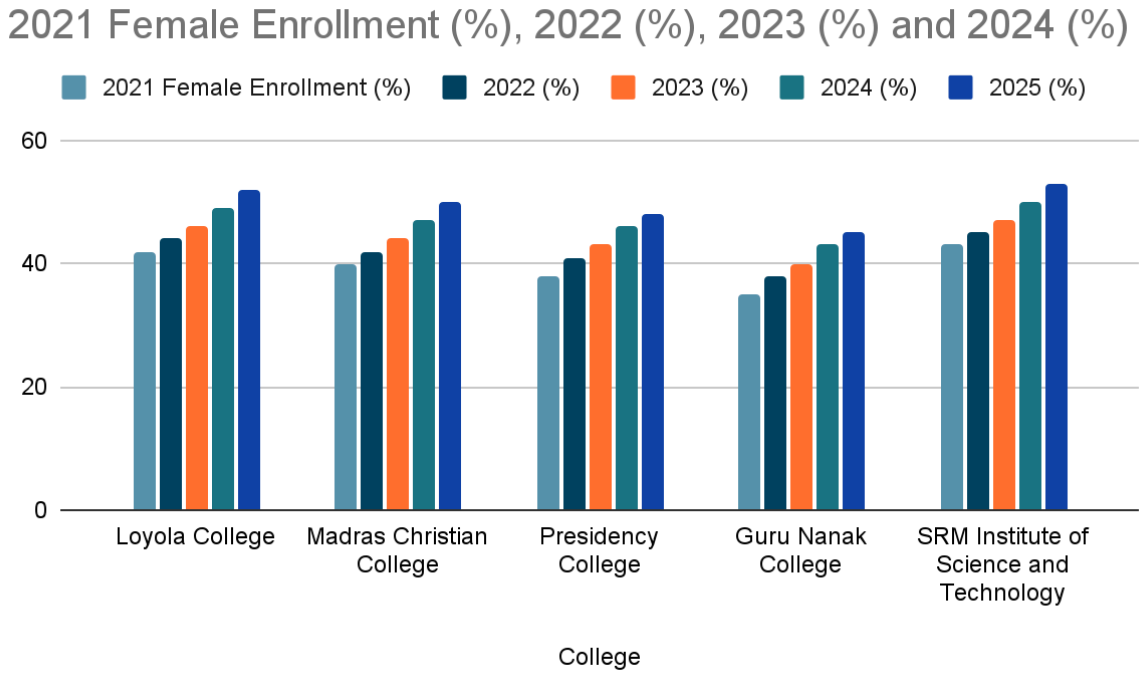
- **Enrollment Data:**

College	Female Enrollment (%)	Total BSc Students (approx.)	Trend (2021-2025)
Loyola College	52	2,500	10%
Madras Christian College	50	2,300	8%
Presidency College	48	2,000	9%
Guru Nanak College	45	1,800	11%
SRMIST	53	3,000	12%



Trend (2021-2025) Analysis

College	2021 Female Enrollment (%)	2022 (%)	2023 (%)	2024 (%)	2025 (%)
Loyola College	42	44	46	49	52
Madras Christian College	40	42	44	47	50
Presidency College	38	41	43	46	48
Guru Nanak College	35	38	40	43	45
SRM Institute of Science and Technology	43	45	47	50	53



Institutional Policies and Support Mechanisms

- **Reserved seats and scholarships:** Several colleges have implemented scholarships specifically aimed at encouraging female students in STEM.
- **Mentoring and Awareness Programs:** Gender sensitization workshops, mentorship by female faculty, and career counseling sessions are organized regularly.

- **Safe and supportive campus environment:** Anti-sexual harassment cells and grievance redressal committees ensure a safer campus for female students.

Results

Enrollment Growth (2021–2025)

Across the five colleges, female enrollment in BSc programs increased by **8–12%** in five years.

- **Loyola College**: Grew from 42% (2021) to 52% (2025).
- **MCC**: From 40% to 50%.
- **Presidency College**: From 38% to 48%.
- **Guru Nanak College**: From 35% to 45%.
- **SRMIST**: From 43% to 53%.

Departmental Preferences

- **High Female Representation**: Biology, Chemistry, Mathematics.
- **Low but Growing**: Physics, Computer Science.

Institutional Support

- Scholarships and reserved seats for women in STEM.
- Mentorship and career counseling led by female faculty.
- Anti-harassment cells and grievance redressal mechanisms for campus safety.

Discussion

The results show a clear upward trajectory in female enrollment across all five institutions. This progress suggests that policy interventions—such as scholarships, reserved seats, and mentorship programs—are effective in encouraging more women to enter science programs.

However, the data also reveal **uneven participation across departments**. Fields like biology and chemistry appear to be more socially acceptable choices for women, while physics and computer science continue to face gender gaps. This reflects broader cultural stereotypes that discourage women from engaging in more “technical” fields.

Another challenge is **access to resources**. Some colleges, despite having high enrollment, lack sufficient laboratory facilities and internship opportunities tailored to female students, which can limit their academic and career progression.

Conclusion

This mini research project demonstrates that gender diversity for BSc programs in Chennai is steadily improving, with female enrollment reaching near parity in several institutions. Nonetheless, persistent challenges in certain departments and social-cultural barriers highlight the need for continuous intervention.

Recommendations

1. **Expand Scholarships**: Increase funding and outreach for female STEM students.
2. **Strengthen Research Opportunities**: Provide internships and lab access to enhance experiential learning.
3. **Cultural Awareness**: Intensify gender sensitization programs for students, staff, and communities.
4. **Industry Partnerships**: Collaborate with industries to design women-focused training and career pathways.